

ADHD as Executive Function Impairments

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In recent years, important changes have been emerging in psychological understanding of ADHD. Researchers have begun to recognize that ADHD is not simply a problem with paying attention, as in listening to a speaker, but rather a developmental impairment of a complex range of executive functions (EF): the management system of the brain's cognitive functions.

One way of thinking about EF is to picture a symphony orchestra whose members are all very fine musicians. Even when the musicians are excellent, if there is not a conductor to organize and integrate efforts of the individual musicians, getting them to play their respective parts in the same piece at the same time – one who can bring in the strings, and the tympani, etc. and then fade them out at the proper moment – the music will not be very good. The problems with ADHD, as we are now beginning to understand it, are not with those parts of the brain that would correspond to the individual musicians. The difficulties originate in the management system that controls and manages these activities, integrating them moment by moment for managing the multiple tasks of daily life.

The brain's executive functions begin to develop in early childhood as the prefrontal cortex develops, then continue through adolescence into young adulthood. Parallel to the gradual development of EF, parents, teachers and others in a child's environment gradually escalate their expectations for the child to exercise an increasing measure of self-management, ranging from the simple tasks of dressing and self-care gradually to more complex responsibilities, e.g., managing multiple courses of study in high school, or driving a motor vehicle.

Some impairments of executive function occur at the most basic levels of behavior management: difficulties in self-control of action and verbalization may manifest as hyperactivity or extreme impulsivity in the earliest school years or before. Other impairments of EF are more subtle, impacting functions of organizing, planning, remembering, etc. that are not developed or expected until much later, sometimes not until later elementary school grades, junior high or high school. Sometimes parents intervene so much to help their adolescents stay organized and on task, that ADHD impairments are masked until the teen moves away from home, possibly to attend college. When the youth then enters a situation where such parental scaffolding is unavailable, they may experience much difficulty.

Once ADHD was diagnosed on the basis of overt disruptive behavior demonstrated in childhood. Understanding of the disorder as an impairment of EF requires a wholly different approach to assessment. Because EF are largely cognitive, covert, interactive, not easily observed, and not easily isolated for capture in laboratory testing, an intensive clinical interview to gather self-report from the patient as well as from others who know the patient is probably the most effective means of assessment.

Of particular importance is information regarding the patient's capacities in performing complex, everyday tasks, e.g., organizing homework, keeping up with paperwork, cleaning one's household,

managing money, driving a motor vehicle, handling complex social interactions — functions that involve multiplicity of cognitive functions.

Assessment of ADHD should take into account two important characteristics of ADHD symptoms: they are dimensional and are also situation-specific. ADHD symptoms are dimensional in that virtually everyone suffers some impairment in these functions at times. ADHD is not like pregnancy where one either is or is not, with no middle ground. Rather, ADHD is like depression. Everyone gets a bit depressed from time to time, but that is not sufficient reason for a diagnosis of dysthymia or major depression. It is only when an individual's depressive symptoms are persistent, pervasive and significantly impairing that a clinician reasonably diagnoses the patient as being depressed. Everyone has difficulty with symptoms of ADHD occasionally; only those with chronic impairment warrant diagnosis. ADHD is a dimensional disorder, not an “all-or-nothing” condition.

More problematic for most people to understand is the situational variability of ADHD. Most persons with ADHD have a few domains of activities for which they have no difficulty paying attention, and in which EF impairments are absent. It may be that they have chronic difficulty with ADHD symptoms in many areas of their lives, but when it comes to playing sports or video games, doing art or building Lego constructions, areas of intense interest, the symptoms are absent. Although this phenomena of “can do it here but not most anyplace else” may appear it that ADHD is a simple problem of willpower, clinical evidence suggests otherwise.

When asked about how they can concentrate so well on this one particular activity when they have so much difficulty sustaining attention for virtually everything else, ADHD patients usually respond: “It’s just a matter of what interests me. If the task is intrinsically interesting to me, if it turns me on, or if it is an emergency, then I can usually pay attention to it quite well. If it is not interesting to me, if it doesn’t turn me on, then usually I can’t make myself pay attention, even when I recognize that it would be important for me to do so.” One patient referred to this problem as “impotence of the mind.”

Most people, those who do not have ADHD, can usually make themselves pay attention to tasks, even tasks that are boring, when they recognize that they just have to do it. People with ADHD find it much more difficult to make themselves pay attention unless the task is one that has immediate interest value to them. The core of their problem is a developmental impairment in being able to manage their mind to focus on tasks they need to do, even when those tasks are not immediately interesting. The situational variability of ADHD symptoms illustrates that ADHD is essentially a disorder of impaired executive functions.

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